

ABSTRACT OF DISCLOSURE

5 An electrolyte for a lithium battery includes a non-aqueous organic solvent, a lithium salt, and an additive comprising a) a sulfone-based compound and b) a C₃ to C₃₀ organic peroxide or azo-based compound. The electrolyte may further include a poly(ester)(meth)acrylate or a polymer that is derived from a (polyester)polyol with at least three hydroxyl (-OH) groups, where a portion or all of the hydroxyl groups are substituted with a (meth)acrylic ester and the remaining hydroxyl groups that are not substituted with the (meth)acrylic ester are substituted with a group having no radical reactivity. The lithium battery comprising the electrolyte of the present invention has a significantly improved charge-discharge and cycle life characteristics, recovery capacity ratio at high temperature, and swelling inhibition properties.

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